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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,251	12/22/2004	Ho Sung Kim	5760-2	2922
30565	7590	04/08/2008	EXAMINER	
WOODARD, EMHARDT, MORIARTY, MCNETT & HENRY LLP 111 MONUMENT CIRCLE, SUITE 3700 INDIANAPOLIS, IN 46204-5137				FEELY, MICHAEL J
ART UNIT		PAPER NUMBER		
1796				
MAIL DATE		DELIVERY MODE		
04/08/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/519,251	KIM ET AL.	
	Examiner	Art Unit	
	Michael J. Feely	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 17 December 2001.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-7 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-7 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 22 December 2004 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date _____.	6) <input type="checkbox"/> Other: _____ .

DETAILED ACTION

Pending Claims

Claims 1-7 are pending.

Response to Amendment

1. The previous rejection of claims 1-7 under 35 U.S.C. 112, second paragraph, has been overcome by amendment
2. The rejection of claims 1, 2, and 6 under 35 U.S.C. 102(a/e) as being anticipated by Koshy (US Pat. No. 6,451,876) has been withdrawn/overcome by amendment.
3. The rejection of claims 1, 2, and 6 under 35 U.S.C. 102(b) as being anticipated by Makhlof et al. (US Pat. No. 5,712,317) has been withdrawn/overcome by amendment.
4. The rejection of claims 1, 2, and 6 under 35 U.S.C. 102(b) as being anticipated by Deviney et al. (US Pat. No. 5,403,655) has been withdrawn/overcome by amendment.
5. The rejection of claims 1, 2, and 6 under 35 U.S.C. 102(b) as being anticipated by Deviney et al. (US Pat. No. 5,385,778) has been withdrawn/overcome by amendment.
6. The rejection of claims 1, 2, and 6 under 35 U.S.C. 102(b) as being anticipated by Koshy (WO 02/31077) has been withdrawn/overcome by amendment.
7. The rejection of claims 1, 2, and 6 under 35 U.S.C. 102(b) as being anticipated by Harrison (US Pat. No. 6,403,222) has been withdrawn/overcome by amendment.
8. The rejection of claims 1, 2, and 6 under 35 U.S.C. 102(b) as being anticipated by Makhlof et al. (US Pat. No. 5,470,886) has been withdrawn/overcome by amendment.

9. The rejection of claim 1 under 35 U.S.C. 102(b) as being anticipated by Yokohama Rubber (Derwent Abstract 77355W/47) was been withdrawn/overcome by amendment.

10. The rejection of claim 7 under 35 U.S.C. 102(a/e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Koshy (US Pat. No. 6,451,876) has been withdrawn/overcome by amendment.

11. The rejection of claim 7 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over any of: Makhlof et al. (US Pat. No. 5,712,317); Deviney et al. (US Pat. No. 5,403,655); Deviney et al. (US Pat. No. 5,385,778); Koshy (WO 02/31077); Harrison (US Pat. No. 6,403,222); Makhlof et al. (US Pat. No. 5,470,886); and Yokohama Rubber (Derwent Abstract 77355W/47) has been withdrawn/overcome by amendment.

12. The rejection of claims 3-5 under 35 U.S.C. 103(a) as being unpatentable over any of Koshy (US Pat. No. 6,451,876); Makhlof et al. (US Pat. No. 5,712,317); Deviney et al. (US Pat. No. 5,403,655); Deviney et al. (US Pat. No. 5,385,778); Koshy (WO 02/31077); Harrison (US Pat. No. 6,403,222); and Makhlof et al. (US Pat. No. 5,470,886) has been withdrawn/overcome by amendment.

Claim Rejections - 35 USC § 112

13. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

14. Claims 1-7 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. A *specific sequence of process steps* is critical or essential to the practice of the invention, but not included in the claim(s). Such an omission is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

In order to achieve the instantly claimed *permanent deformation around the microspheres and compressive residual stress in the thermoset mixture*, a specific sequence of steps is required, as detailed in the specification (*bottom of page 2 through page 5*). This illustrated in Applicant's "MEH" material. The following steps are required:

- (a) providing a liquid phase base thermoset resin;
- (b) mixing expandable hollow microspheres with the base thermoset resin;
- (c) heating the mixture of base thermoset resin and expandable hollow microspheres to a temperature below the activation temperature of the expandable hollow microspheres;
- (d) adding a hardener to said mixture to form a curable composition;
- (e) pouring said curable composition into a casting mold and allowing said curable composition to cure at room temperature;
- (f) heat treating the cured molding at a temperature at or above the activation temperature of the expandable hollow microspheres;
- (g) cooling the heat treated molding to room temperature;
- (h) further heat treating the cooled molding at a temperature at or above the activation temperature of the expanded hollow microspheres; and
- (i) cooling the heat treated molding to room temperature.

15. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

16. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: *see rejection above.*

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wycech (US Pat. No. 4,923,902) and Mori (JP 01-249841) disclose similar methods; however, they fail to disclose the *essential steps* of the instant invention.

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is (571)272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Y. Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael J Feely/
Primary Examiner, Art Unit 1796

March 31, 2008